

DAIRY PIPELINE

Management and Environment Accounts for 95% of the Factors Affecting Conception Rates.

Increasing milk yield, dependence on human labor for the detection of estrus/insemination of cows, and increased herd size have combined to provide an environment that challenges management's ability to maintain an acceptable level of reproductive performance. Over the last 50 years large increases in milk yield per cow have been associated with declining conception rates. From a survey of Holstein herds in New York State the average conception rate for lactating cows in 1951 was approximately 60% and the average milk yield was 8,800 lbs per year. In 2001, the New York State average for Holstein herds surveyed was a 40% conception rate with an average milk yield of approximately 22,000 lbs per year.

Most dairy producers now manage cows in groups, not individually; however, when breeding and conception occurs it is one cow at a time. Changes in her body condition, uterine and oviduct pH levels, and the number of estrous cycles prior to the deposition of semen at first service are the real factors that determine the outcome of effective semen deposition. Selection for "high" milk yield over several generations has reduced the Pregnancy Rate because of an unfavorable genetic correlation between milk yield and days open of about 3%. So, yes, there is a genetic component that high milk yield reduces reproductive efficiency and we need to use this genetic information to select bulls that will not compromise the fertility level of cows in the future. However, to get cows pregnant now and in the future the vast majority of factors that influence the outcome of semen deposition is related to management decisions and environmental characteristics.

I group the factors that affect AI fertility into four major areas, **management**, **cow fertility**, **AI technique**, and **health**. These areas are inter-related but easier to discuss and evaluate at the farm level if taken individually. The "management" area includes personnel, standard operating procedures, and cow comfort. "Cow fertility" includes the transition period and its effects on negative energy balance, postpartum diseases and dry matter intake. This area includes many things about the feeding program from

what is in the ration, to how it is fed, and what the cow actually eats. An additional area in "cow fertility" is protein level and source that interacts with rumen degradability, excess ammonia, uterine and oviduct pH level. Techniques in AI range from the actual proficiency of depositing semen past the cervix to handling procedures that maximize semen quality to timing of insemination and fertility level of the semen. Semen fertility has been evaluated for years by the dairy records processing center in Raleigh, NC (DRMS). Twice yearly an Estimate Relative Conception Rate list of active AI sires is published on their website (www.drms.org). In the final area of health, vaccination programs, mastitis incidence, treatments and culling policy have all been shown to affect conception rates.

Reproductive efficiency is an important management component that directly and indirectly influences the economic performance of the dairy operation. Direct effects of a successful reproductive program are first realized by increasing the likelihood of cows remaining in the herd. Indirect effects would include increased percentage of cow life spent in profitable milk, increased rate of replacements generated, and improved return on other interventions by reducing competitive risk of removal. Conception rates for lactating cows have declined over the last 50 years and management and environmental factors must first be addressed to make real improvements immediately and long-term.

-- Ray L. Nebel

Dairy Extension Coordinator and Reproductive
Management Scientist
(540) 231-4432 email: rnebel@vt.edu

**** Upcoming Activities****

VSDA Annual Convention	Jan 21
<i>Holiday Inn Golf & Conference Center,</i>	
Staunton, VA	
Eighth National Dairy Golf and	Mar 31-April 3
Heifer Conference, <i>Hotel Roanoke</i>	

Raymond L. Nebel
Dairy Extension Coordinator
And Extension Dairy Scientist, Reproduction

